

raising a water surface formed between the cooling water and a vapor in the at least one water rod by increasing the flow rate of the cooling water from a beginning of one fuel cycle to an end of the one fuel cycle; and

subsequently increasing the flow rate of cooling water supplied to the core in a state in which the at least one water rod is completely filled with the cooling water at an end of the one fuel cycle.

B. cont.  
25. A method according to claim 24, wherein the step of raising the water surface includes increasing the flow rate of the cooling water in the range of 0% to less than 110% of the flow rate, and the subsequent step of increasing the flow rate of the cooling water includes increasing the flow rate above 110% of the flow rate.

26. A method according to claim 25, wherein each of said plurality of fuel assemblies include an upper tie plate, a lower tie plate, the plurality of fuel rods having upper ends held by the upper tie plate and lower ends held by a fuel rod holding portion of the lower tie plate, the fuel rods being each filled with a plurality of fuel pellets, and the at least one water rod being arranged among the fuel rods, a resistance member provided at a lower end portion of the fuel assembly, a coolant ascending path in which the at least one water rod has a coolant inlet port open in a region lower than the resistance member, and a coolant descending path which is

E communicated with the coolant <sup>ascending</sup>~~descending~~ path and which has a coolant delivery port that is open in a region higher than the resistance member, in order to guide the coolant downwardly in an opposite direction to a direction in which the coolant flows in the coolant ascending path.

27. A method according to claim 26, wherein the resistance member is the fuel rod holding portion of the lower tie plate.

28. A method according to claim 24, wherein each of said plurality of fuel assemblies include an upper tie plate, a lower tie plate, the plurality of fuel rods having upper ends held by the upper tie plate and lower ends held by a fuel rod holding portion of the lower tie plate, the fuel rods being each filled with a plurality of fuel pellets, and the at least one water rod being arranged among the fuel rods, a resistance member provided at a lower end portion of the fuel assembly, a coolant ascending path in which the at least one water rod has a coolant inlet port open in a region lower than the resistance member, and a coolant <sup>ascending</sup>~~descending~~ path which is communicated with the coolant descending path and which has a coolant delivery port that is open in a region higher than the resistance member, in order to guide the coolant downwardly in an opposite direction to a direction in which the coolant flows in the coolant ascending path.